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W.R. Laird
Carleton University, Ottawa, Canada K1S 5B6
E-mail address: wrlaird@ccs.carleton.ca

Available online 10 November 2009
doi:10.1016/j.hm.2009.07.007

Mathematical Works Printed in the Americas, 1554–1700
By Bruce Stanley Burdick. Baltimore (The Johns Hopkins University Press). 2009. ISBN 978-0-8018-8823-6. 392 pp. $55.00

Bruce Burdick's *Mathematical Works Printed in the Americas, 1554–1700* is a stunning achievement that leaves this reviewer nearly at a loss for words. This is a truly monumental reference book reminiscent of the masterpieces of Florian Cajori and Louis Karpinski. Logically thinking, perhaps it should not come as a shock that eventually someone would write a work to rival Karpinski's *Bibliography of Mathematical Works Printed in America Through 1850*; still, it is startling to actually see such a work in print and hold it in one's hands.

This bibliography includes a total of 259 works, including 220 almanacs and 39 publications classified as "mathematical works, excluding almanacs" (p. 17). Fortunately, Burdick devotes considerable attention to the 39 nonalmanac mathematical works; Part I is devoted entirely to those works and consists of 164 pages. Part II, entitled *Almanacs, Ephemerides, and Lunarios*, is 138 pages. It will come as a surprise to many readers that few of these works come from what is now the United States: just two of the nonalmanacs and 98 of the almanacs. Mexico is the source of 118 of the works, with 41 coming from Peru.

The excellent 18-page introduction includes a discussion of criteria for inclusion of works in this book, which will be interesting to historians of mathematics in its own right, as it addresses the age-old question of "What is a mathematical work?" or more generally, "What is mathematics?" Burdick takes a liberal view, and notes that "ephemerides, giving the position of the sun, moon, and planets throughout the year ... can give insights into the use of mathematics by their authors and users, even if the algorithms they used are not explicit" (p. 7).

For each work in Parts I and II, Burdick includes basic bibliographic data such as the author, printer, city of publication and a complete transcription of the title page. This data also includes the locations of the original works, the existence of reprints or translations, and the existence of images of the text on websites. Merely assembling this basic data must have been a Herculean task. Burdick cites 57 libraries, including a small number of private collections, which he visited to view original works. They include locations in the United States, the United Kingdom, Mexico, France, Spain, and Chile. While some of the information on the location of books could be found online, much was only available through searches of local electronic or paper card catalogs.

Beyond the data, for the more significant works, there are extensive commentaries on authors and texts, comparisons to other works, and nearly anything else one might find interesting about these items. Clearly Burdick has read and thought about these publications (and related secondary sources) very carefully. Perhaps the best example of this diligence is his discovery regarding the origin of Juan Diez Freyle, the author of the 1556 *Sumario*

Compendioso. Burdick gives compelling evidence that the author of this work "is probably not the same person as either of the individuals named Juan Díaz that have been made to fit him by some" (p. 45), where "some" includes the esteemed David Eugene Smith and Louis Karpinski. Unfortunately, Burdick notes that "we are left in the unhappy position of having nothing to say about the life of Juan Diez Freyle that can be supported by the historical record, other than that he was a Dominican and was present in Mexico at least in April of 1556" (p. 45). Bruce Burdick clearly is not the type to leap to unjustifiable conclusions.

The earliest work included is Alonso de la Vera Cruz's *Recognitio Summularium*, a logic text printed in Mexico in 1554, arguably the earliest American mathematics book. The earliest female-authored book included here is Feliciana Ruiz's 1676 almanac *El Lunario, Regimiento*. Ruiz had to ask the Mexican Inquisition for permission to publish her almanac, and a reproduction of her letter is also printed in this book.

Of the 39 nonalmanac works, only two are in English. One is John Eliot's *The Logic Primer: Some Logical Notions to Initiate the Indians in the Knowledge of the Rule of Reason,* published in Cambridge in 1672. This was actually written in the Massachusett language "with an interlinear word-by-word translation into English" (p. 142). The other English work is Jacob Taylor's 1697 *Tenebrae*, which is devoted primarily to eclipse data but also includes some purely mathematical material on solving triangles. Nine more are in Latin, with the remaining 28 in Spanish. Unfortunately for some readers, most of the title pages in Latin and Spanish are not translated and, as a reader with limited Latin and Spanish, I was sometimes left wondering what the texts were saying.

The 53 pages of appendices and indices at the end of the book will be extremely valuable to scholars, and more than justify the modest price of this volume by themselves. There are 17 pages of "Works Consulted," helpfully divided into sections "Rare Works (through 1850)," "Reprints and Translations of Rare Works," "Formally Cited Bibliographies," "Other Bibliographic Works and Articles," "History and Biography," and "Miscellaneous." The works in Part I are indexed by topic, including accounting, arithmetic and algebra, astrology, astronomy, geometry, logic, military matters, trigonometry, and others. There are indices of printers and authors, an index of libraries with full contact information, and of course, a general index.

The mathematical and historical communities owe a great debt to Bruce Burdick for compiling this remarkable resource. It seems destined to become a classic reference in the field of the history of mathematics in the Americas.

Andrew Perry
Department of Mathematics, Physics, and Computer Science,
Springfield College,
263 Alden Street,
Springfield,
MA 01109, USA
E-mail address: andrew_b_perry@spfldcol.edu

Available online 6 January 2010

doi:10.1016/j.hm.2009.11.006